

added, that Colour will not vanish or change its species but be diluted, and by adding more and more white it will be diluted more and more perpetually. Lastly, if red and violet be mingled, there will be generated according to their various Proportions various Purples, such as are not like in appearance to the Colour of any homogeneous Light, and of these Purples mixt with yellow and blue may be made other new Colours.

PROP. V. THEOR. IV.

Whiteness and all grey Colours between white and black, may be compounded of Colours, and the whiteness of the Sun's Light is compounded of all the primary Colours mixt in a due proportion.

The Proof by Experiments.

EXPER. IX.

Fig. 5. The Sun shining into a dark Chamber through a little round Hole in the Window shut, and his Light being there refracted by a Prism to cast his coloured Image P T upon the opposite Wall: I held a white Paper V to that Image in such manner that it might be illuminated by the coloured Light reflected from thence, and yet not intercept any part of that Light in its passage from the Prism to the Spectrum. And I found that when the Paper was held nearer to any Colour than to the rest, it appeared of that Colour to which it approached nearest; but when it was equally or almost equally

equally distant from all the Colours, so that it might be equally illuminated by them all it appeared white. And in this last situation of the Paper, if some Colours were intercepted, the Paper lost its white Colour, and appeared of the Colour of the rest of the Light which was not intercepted. So then the Paper was illuminated with Lights of various Colours, namely, red, yellow, green, blue and violet, and every part of the Light retained its proper Colour, until it was incident on the Paper, and became reflected thence to the Eye; so that if it had been either alone (the rest of the Light being intercepted) or if it had abounded most and been predominant in the Light reflected from the Paper, it would have tinged the Paper with its own Colour; and yet being mixed with the rest of the Colours in a due proportion, it made the Paper look white, and therefore by a composition with the rest produced that Colour. The several parts of the coloured Light reflected from the Spectrum, whilst they are propagated from thence thro' the Air, do perpetually retain their proper Colours, because wherever they fall upon the Eyes of any Spectator, they make the several parts of the Spectrum to appear under their proper Colours. They retain therefore their proper Colours when they fall upon the Paper V, and so by the confusion and perfect mixture of those Colours compound the whiteness of the Light reflected from thence.

EXPER. X.

Let that Spectrum or solar Image P T fall now upon Fig. 6. the Lens M N above four Inches broad, and about six
N 2 Feet